General Chemistry 1: Types of Chemical Reactions

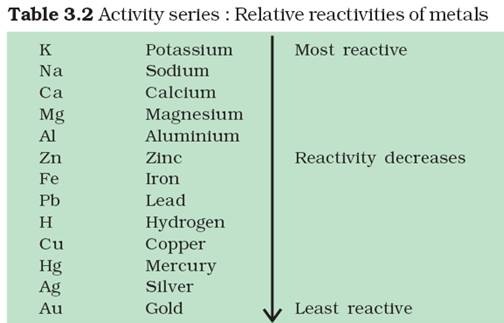
1. Combustion Reactions: an organic (carbon-containing) compound + O2 🡪H2O + CO2
2. Synthesis Reactions: two compounds combine to form a product in the form of A + B 🡪 C

Ex: 4Fe + 3O2 🡪 2Fe2O3

1. Single-Replacement Reactions: an element (usually metal) may react with a compound to produce a different element and a new compound in the form of A + BC🡪 AC + B

Ex: 2AgNO3 + Cu 🡪 2Ag + Cu (NO3)2

Note: for this reaction, you should be familiar with the activity series (please refer to your book for reference), basically, the metal (Cu in this case) above another metal (Ag) will dominant and take Ag’s partner.



1. Double-Replacement Reactions (or metathesis): The exchange of partners between the two reactants of the form of AB + CD 🡪 CB + AD where A and C are both cations (+) and B and D are anions (-).

Ex: MgSO4 + Ba(NO3)2 🡪 BaSO4 + Mg(NO3)2

1. Acid-Base Reactions (or Neutralization): an acid reacts with a base to yield a salt and water. This is very similar to the Double-Replacement Reactions mentioned above.

Ex: 2HCl + Ca(OH)2 🡪 CaCl + 2H2O

Acid Base Salt Water

1. Acids react with certain salts such as carbonates (CO3-2), sulfites (SO3 -2), and sulfides (S-2): gaseous products occur.

Ex: Na2CO3(aq) + 2HCl(aq) 🡪 2NaCl(aq) + H2O(l) + CO2(g)

Na2SO3(aq) + 2HCl(aq) 🡪 2NaCl(aq) + H2O(l) + SO2 (g)

Na2S(aq) + H2SO4(aq) 🡪 Na2SO4 + H2S (g)

1. Oxidation-Reduction Reactions: one species is oxidized (loses electrons or increase in charge); the other species is reduced (gains electrons or decrease in charge)

Ex: Cd+2  +  Fe    Fe +2  +   Cd

Animation explanation of some types of chemical reactions: <http://www.youtube.com/watch?v=tE4668aarck>